

1. Record Nr.	UNINA9911009294003321
Autore	Morgan Matthew A
Titolo	Relativistic Field Theory for Microwave Engineers
Pubbl/distr/stampa	Norwood, MA : , : Artech House, , 2020 ©2024
ISBN	9781685690687 1685690688
Edizione	[1st ed.]
Descrizione fisica	1 online resource (349 pages)
Soggetti	Relativity (Physics) Electromagnetic fields
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Relativistic Field Theory for Microwave Engineers -- Contents -- Preface -- Acknowledgments -- Chapter 1 Classical Electromagnetism -- 1.1 Early Concepts in Electricity and Magnetism -- 1.2 Advancement Through Experimentation -- 1.2.1 Absence of Magnetic Monopoles -- 1.2.2 Electrostatic Force and Gauss's Law -- 1.2.3 Lorentz Force and Ampère's Law -- 1.2.4 Electromagnetic Induction -- 1.3 Mathematical Refinement -- 1.3.1 Maxwell's Model -- 1.3.2 Electric Displacement -- 1.3.3 Propagating Waves -- 1.3.4 Potential Formulation -- 1.4 Matter and Energy -- 1.4.1 Material Constituent Parameters -- 1.4.2 Conductivity -- 1.4.3 Conservation of Energy -- 1.4.4 Conservation of Momentum -- References -- Chapter 2 Reference Frame Transformation

-- 2.1
Galilean Transformation -- 2.1.1
Translation (Spatial and Temporal) -- 2.1.2
Rotation -- 2.1.3
Reflection -- 2.1.4
Boosts -- 2.2
Spacetime -- 2.2.1
Invariability of the Speed of Light

Sommario/riassunto

This book, 'Relativistic Field Theory for Microwave Engineers' by Matthew A. Morgan, provides a comprehensive exploration of the application of relativistic field theory concepts to microwave engineering. It delves into classical and modern approaches in electromagnetism, the mathematical formulation of Maxwell's equations, and the implications of relativistic effects in engineering contexts. The text is aimed at professionals and students in microwave engineering and related fields, offering insights into the theoretical underpinnings and practical implications of field theory. The book covers topics such as reference frames, waves in spacetime, covariant formulations, and interactions with matter, using a mix of theoretical exploration and practical application to enhance understanding.
